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July 19, 2005

Ken Marcy, Task Monitor
United States Environmental Protection Agency, Region 10
1200 Sixth Avenue, Mail Stop ECL-115
Seattle, Washington 98101

RE: Contract Number 68-S0-01-01, Technical Direction Document Number 03-08-0006;
Atka Cape Kudugnak Site Sampling and Quality Assurance Plan (SQAP)

Dear Mr. Ken Marcy:

Enclosed please find the final version of the site-specific SQAP for the Atka Cape Kudugnak Site located on Atka Island, Alaska. Appendices were submitted with the draft SQAP and have remained unchanged. For the reason, they are not being re-submitted with the final SQAP. Please remove them from the draft SQAP and attach them to the final SQAP.

If you have any questions or comments, please contact me at (206) 624-9537.

Sincerely,

Linda Foster
START-2 Project Leader

Enclosure

cc: Jacques Gusmano, Remedial Project Manager, EPA, Region 10, Anchorage, Alaska
Mark Woodke, START-2 Project Manager, E & E, Seattle, WA

Atka Cape Kudugnak
Sampling and Quality Assurance Plan
Atka Island, Alaska
TDD: 03-08-0006

Ecology and Environment, Inc.
Contract: 68-S0-01-01
July 2005

Region 10

START-2

Superfund Technical Assessment and Response Team

Submitted To: Ken Marcy, Task Monitor
United States Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

SAMPLING AND QUALITY ASSURANCE PLAN FOR:

Atka Cape Kudugnak
Atka Island, Alaska

TDD: 03-08-0006

Prepared by:

Mark Woodke
Ecology and Environment, Inc.
Seattle, Washington

Contract No: 68-S0-01-01

Date: July 2005

APPROVALS			
Title	**Name**	**Signature**	**Date**
EPA Task Monitor	Ken Marcy		05/11/05
EPA Quality Assurance Officer	Roy Araki		6/18/05
START-2 Project Manager	Mark Woodke		7/19/05
START-2 Quality Assurance Officer	Mark Woodke		7/19/05

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Key Project Personnel:

EPA Task Monitor:	Ken Marcy, EPA, Seattle, WA
START-2 Program Manager:	Dhroov Shivjiani, E & E, Seattle, WA
START-2 Project Leader:	Linda Foster, E & E, Seattle, WA
START-2 Project Manager:	Mark Woodke, E & E, Seattle, WA
QA Oversight:	Mark Woodke, E & E, Seattle, WA
Data Quality Review:	Mark Woodke, E & E, Seattle, WA

START-2 Sample Numbers: To be determined upon approval of this document.

Analytical Resources: To be determined upon approval of this document.

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LIST OF ACRONYMS

Acronym	Definition
AAFAF	Atka Air Force Auxiliary Field
ACK	Atka Cape Kudugnak
amsl	above mean sea level
ANC	Atxam Native Corporation
ANCSA	American Native Claims Settlement Act
APIA	Aleutian/Pribilof Islands Association, Inc.
AST	aboveground storage tank
ATV	all-terrain vehicle
bgs	below ground surface
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Laboratory Program
CLPAS	Contract Laboratory Program Analytical Services
DQIs	data quality indicators
DQOs	data quality objectives
DoD	Department of Defense
DRO	diesel-range organics
E & E	Ecology and Environment, Inc.
EPA	United States Environmental Protection Agency
FOWP	field operations work plan
GIS	Geographic Information System
GPS	Global Positioning System
IDW	investigation-derived waste
KIC	Kaktovik Inupiat Corporation
LCS	laboratory control sample
MEL	Manchester Environmental Laboratory
mg/kg	milligrams per kilogram
ml	milliliter
NAD	North American Datum

LIST OF ACRONYMS (CONTINUED)

Acronym	Definition
NPL	National Priorities List
PA	preliminary assessment
pesticides	chlorinated pesticides
PCBs	polychlorinated biphenyls
PE	performance evaluation
PM	project manager
PO	project officer
PPE	probable point of entry
QA	quality assurance
QAO	quality assurance officer
QAPP	quality assurance project plan
QC	quality control
QMP	quality management plan
RPD	relative percent difference
RSCC	regional sample control coordinator
SI	site inspection
SDMS	Site Data Management System
SIS	Sample Information System
SOPs	standard operating procedures
SOW	Statement of Work
SPAF	sample plan alteration form
SQAP	sampling and quality assurance plan
START	Superfund Technical Assessment and Response Team
SVOCs	semivolatile organic compounds
TAL	Target Analyte List
TDD	Technical Direction Document
TDL	target distance limit
TM	task monitor

LIST OF ACRONYMS (CONTINUED)

Acronym	Definition
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VOCs	volatile organic compounds

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Sampling and Quality Assurance Plan For:

Atka Cape Kudugnak Site
Atka Island, Alaska

TDD: 03-08-0006

1. PROJECT MANAGEMENT

1.1 PROJECT/TASK ORGANIZATION

This subsection outlines the individuals directly involved with the Atka Cape Kudugnak (ACK; also known as Cape Kudugnax) project and their specific responsibilities. Communication lines are shown in the Project Organization Chart (Figure 1-1).

1.1.1 United States Environmental Protection Agency (EPA), Region 10, Task Monitor (TM)

The EPA TM is the overall coordinator of the project and decision maker. The TM reviews and approves the site-specific sampling and quality assurance plan (SQAP) and subsequent revisions in terms of project scope, objectives, and schedules. The TM ensures site-specific SQAP implementation and is the primary point of contact for project problem resolution and has approving authority for the project.

1.1.2 EPA Region 10 Quality Assurance (QA) Officer

The EPA QA officer reviews and approves the site-specific SQAP and revisions in terms of QA aspects and may conduct assessments of field activities.

1.1.3 EPA Region 10 Regional Sample Control Coordinator (RSCC)

The EPA RSCC coordinates sample analyses performed through the EPA Contract Laboratory Program (CLP) or the EPA Region 10 Manchester Environmental Laboratory (MEL) or both and provides sample identification numbers.

1.1.4 Ecology and Environment, Inc. (E & E) Superfund Technical Assessment and Response Team (START)-2 Project Manager (PM)

The E & E START-2 PM provides overall coordination of field work and provides oversight during the preparation of the site-specific SQAP. The PM implements the final approved version of the

site-specific SQAP and records any deviations and acts as the primary contact point with the EPA TM. The PM receives CLP/EPA Region 10 laboratory information from the RSCC, acts as primary START-2 point of contact for technical problems, and is responsible for the execution of decisions and courses of action deemed appropriate by the TM. In the absence of the START-2 PM, a START-2 site manager will assume the PM's responsibilities.

1.1.5 E & E START-2 QA Officer (QAO)

The QAO reviews and approves the site-specific SQAP, conducts in-house audits of field operations, and is responsible for auditing and reviewing the field activities and final deliverables and proposing corrective action, if necessary, for nonconformities.

1.1.6 E & E START-2 Program Manager and EPA Project Officer (PO)

The PO is responsible for coordinating resources requested by the TM for this project and for the overall execution of the START-2 program.

1.2 PROBLEM DEFINITION/BACKGROUND

Pursuant to EPA START-2 Contract Number 68-S0-01-01 and Technical Direction Document (TDD) number 03-08-0006, E & E will perform a preliminary assessment/site inspection (PA/SI) at the ACK site located on Atka Island, Alaska approximately 10 miles northeast of the City of Atka (Figure 1-2). The PA/SI will consist of limited sampling at potential contaminant source and target areas for site characterization purposes. This document outlines the technical and analytical approaches E & E will employ during PA/SI field work.

This document is a combined field operations work plan (FOWP) and site-specific quality assurance project plan (QAPP) for field sampling activities. The combined FOWP/QAPP, hereafter called the SQAP, includes a brief site summary, project objectives, sampling and analytical procedures, and QA requirements that will be used to obtain valid, representative field samples and measurements. The SQAP is intended to be combined with information presented in E & E's (2001a) quality management plan (QMP) for Region 10 START-2. A copy of the QMP is available in E & E's office located at 2101 Fourth Avenue, Suite 1900, Seattle, Washington 98121.

Work performed under this SQAP will be in cooperation with the Aleutian/Pribilof Islands Association, Inc. (APIA), the Atxam Native Corporation (ANC), and the Kaktovik Inupiat Corporation (KIC).

This subsection discusses the site background (subsection 1.2.1), site operations and source characteristics (subsection 1.2.2), and site characterization (subsection 1.2.3).

1.2.1 Site Background

Information presented in this subsection is based on a review of site background information and interviews with property owners and representatives from various regulatory agencies.

1.2.1.1 Site Location and Description

This subsection describes the site location, site description, and site ownership history.

1.2.1.1.1 Site Location

Site Name:	Atka Cape Kudugnak
CERCLIS ID Number:	To be determined
Location:	10 miles north of Atka Field
	Atka Island, Alaska 99547
Latitude:	52° 13'39.864" North
Longitude:	174° 3'56.646" West
Legal Description:	Section 9, Township 92 south, Range 175 West, Umiat Meridian
Borough:	Aleutians West Census Area
Congressional Dist.:	One
Site Owner:	Atxam Native Corporation, PO Box 47001
	Atka, Alaska 99547
	Phone (907) 839-2237
Site Operators:	United States Army Engineer District, Alaska, PO Box 6898
	Elmendorf Air Force Base, Alaska 99506-0898
Site Contacts:	Ray Golodoff, Environmental Coordinator
	Kaktovik Inupiat Corporation, P. O. Box 47030
	Atka, Alaska 99547
	Phone (907) 743-6930

1.2.1.1.2 Site Description

The ACK site is located in section 9, township 92 south, range 175 west in the Aleutians West Census area on Atka Island (Figure 1-2) approximately 10 miles northeast of the City of Atka and the Atka Air Force Auxiliary Field (AAFAF; Figure 1-3). The site is located approximately 50 feet above mean sea level (amsl) and covers approximately 100 acres (Herrera 2002). The ground surface is relatively flat with a slight slope (2%) towards the Pacific Ocean (USGS 1959). The primary land uses within one mile of the site are forest and fields (USACE 2002a).

The ACK site is a former Naval radio station site that was used to support air operations at the former AAFAF. The site consists of collapsed radio towers, one standing radio tower, various buildings (including a power plant, barracks, a mess hall, and other dilapidated buildings), and piles of drums and debris (Figure 1-4). The deteriorated buildings, including the former barracks, power plant, and mess hall, and scattered debris pose a hazard to local residents who visit the site while conducting subsistence activities. Three aboveground storage tanks (ASTs; approximately 2,000 gallons each) and 3 transformers were also noted on the property (USACE 2002a) but are not included in Figure 1-4. The locations of these ASTs and transformers will be determined as part of the PA/SI field activities. Common vegetation on the site includes Pacific alder, low-lying willow, wild celery, and rye grass (Herrera 2002).

1.2.1.1.3 Site Ownership History

The ACK site began operation on March 2, 1943, as a United States (U.S.) Naval radio station used to support air operations at the former AAFAF during World War II. The ACK site was closed in July, 1944 and the improvements (radio towers, radio building, power plant, barracks, and mess hall) were abandoned in place. The site was turned over to the Atxam Native Corporation in February, 1979 under the American Native Claims Settlement Act (ANCSA) by the U.S. Department of Defense (DoD). No operations occur at this vacant site (USACE 2002a).

1.2.2 Site Operations and Source Characteristics

The ACK site was in operation between March 2, 1943 and July 31, 1944. Site operations included the provision of navigational data and homing signals to DoD aircraft in the vicinity. The ACK

site operations included the use of gasoline and diesel fuels for power supplies, polychlorinated biphenyls (PCBs) in transformers, and various metals and other chemicals. Potential contaminants of concern at the site associated with these operations include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), chlorinated pesticides (pesticides), PCBs, and target analyte list (TAL) metals..

1.2.3 Site Characterization

This subsection summarizes previous site investigations (subsection 1.2.3.1), discusses migration/exposure pathways and targets (subsection 1.2.3.2), and describes areas of potential contamination (subsection 1.2.3.3).

1.2.3.1 Previous Site Investigations

Local residents informed the U.S. Army Corps of Engineers (USACE) about the ACK site during a site investigation of the former AAFAF in June 1998. The report for the AAFAF project noted the presence of approximately five hundred 55-gallon drums, 6 tanks, approximately 2,500 cubic yards of diesel-range organic (DRO)-contaminated soil, approximately 50 cubic yards of PCB-contaminated soil, approximately 50 cubic yards of lead-mercury contaminated soil, and 5 degraded automotive batteries at the ACK site. The locations of many of these features are not provided on Figure 1-4 and will be determined once on site. Soil sampling results indicated concentrations of PCBs (up to 2.3 milligrams per kilogram [mg/kg]), lead (up to 49,000 mg/kg), DRO (26,000 mg/kg), and mercury (47 mg/kg). The maximum lead concentration was collected from within the building containing degraded batteries. (USACE 2002b)

1.2.3.2 Migration/Exposure Pathways and Targets

This subsection discusses the groundwater migration, the surface water migration, the soil exposure, and the air migration pathways and potential targets within the site's range of influence (Figures 1-5 and 1-6).

1.2.3.2.1 Groundwater Migration Pathway

The target distance limit (TDL) for the groundwater migration pathway is a 4-mile radius that extends from the sources at the site. Figure 1-5 depicts the groundwater 4-mile TDL.

The island consists of two distinct geological units; the southwest region is a geologically older eroded area and the northern portion is younger and more rugged. The northern region includes the volcanic areas of Mount Kliuchef and Korovin Volcano. All of the volcanic features rest on a large shield composed on numerous mafic flows. To the west of the volcanic areas is a large rectangular landmass connected by a spit. This is the remnant of the older volcanic center. Bedrock in the area consists of basalts, andesites, and brecchias. Soils at the site are derived from weathered byproducts of the volcanic rocks and consist of coarse textured sandy soils exhibiting a high filtration rate. The openings in the igneous rocks are volumetrically very small and poor sources for groundwater. Additional information regarding aquifers is not available. It is estimated that net precipitation is greater than 30 inches per year (Herrera 2002).

The bedrock and soils on Atka Island are composed of, or derived from, volcanic or extrusive igneous rocks. Most of the porosity and permeability of the igneous rocks are the result of fractures, faults, and the dissolution of minerals within the rock mass. The openings in igneous rocks are volumetrically very small and as a result, rocks of this type are poor sources of groundwater. In addition, the groundwater that is available will commonly drain quickly after a period recharge by infiltration of precipitation. Also, water from these fractures is subject to contamination from the surface where these rocks crop out. A few exceptions include large lava tubes present in some flows, interflow or coarse sedimentary layers between individual flows and deposits of volcanic cinders or ash. As a result, groundwater may be present throughout the island but its quantity and quality are not suitable for residential or commercial use (Herrera 2002).

There are no municipal or private wells or residents located within 4 miles of the site (ADNR 2005). Groundwater is not used to irrigate greater than 5 acres of commercial food or forage crops nor is it used for watering of commercial livestock, commercial food preparation, as a supply for commercial aquaculture, or as a supply for a major or designated water recreation area. The site is not located within a wellhead protection area (Herrera 2002).

1.2.3.2.2 Surface Water Migration Pathway

The surface water migration pathway TDL begins at the probable point to entry (PPE) of surface water runoff from the site to a surface water body and extends downstream for 15 miles. Figure 1-6 depicts the surface water 15-mile TDL.

The site is located approximately 50 feet amsl. A topographic map indicates the site slope to be approximately 2% toward the Pacific Ocean (USGS 1959). Surface water runoff from the site is believed to be via sheet flow prior to discharging to the Pacific Ocean (USGS 1959). The nearest PPE for surface water runoff to the Pacific Ocean is approximately 500 feet from potential areas of concern at the site. The site's entire 15-mile surface water migration pathway TDL is contained in Nazan Bay, part of the Pacific Ocean.

The site is not believed to be located in a floodplain. There are no drinking water intakes or known wetlands along the surface water pathway (Golodoff 2005).

There is no known containment at the site to prevent a release from potential source areas to surface water. The two-year, 24-hour rainfall for Atka is not available; the value for Adak, Alaska, located approximately 100 miles west of Atka, is 2.13 inches (Herrera 2002). The yearly average total precipitation for Adak (the nearest weather station) is 61.50 inches (WRCC 2005). Soils at the site are assumed to consist of coarse sands that exhibit a fast infiltration rate similar to those at the nearby AAFAF (USACE 1999). The upgradient drainage area of the site is estimated from a topographic map to be five acres (USGS 1959).

Surface water is not used for drinking water purposes within the 15-mile TDL. Drinking water for Atka is supplied by a stream located approximately 0.5 mile southwest of Atka and approximately 10.5 miles west of the ACK site. The Atka water is stored in two 30,000-gallon tanks before consumption (Herrera 2002). All 50 homes in Atka are connected to the piped water and sewer system and are plumbed (ADCED 2005). Surface water is not used for irrigation of greater than 5 acres of commercial food or forage crops, for recreational boating, for watering of commercial livestock, commercial food preparation, as a supply for commercial aquaculture, or as a supply for a major or designated water recreation area (Golodoff 2005).

Areas within the TDL are used for commercial, subsistence, and sport fishing. Atka Pride Seafoods operates seasonally to serve the local 45-boat fleet. A majority of the commercial fish harvest

occurs off-shore and beyond the 15-mile TDL, although some commercial fishing is reported to occur approximately 12 to 15 miles from shore (Herrera 2002). The commercial fish harvest within the 15-mile TDL is unknown. Subsistence fishing occurs in Nazan Bay, Korovin Lake, and Engineer Lake. The total estimated subsistence and sport fish harvest within Korovin Lake, Nazan, and Korovin Bays is unknown (Herrera 2002). In addition to subsistence fishing in Korovin and Engineer Lakes, waterfowl are hunted for human consumption. Shellfish also are collected for human consumption from Nazan Bay (Herrera 2002).

Several threatened and endangered species have been documented within the 15-mile TDL. The Stellar sea-lion (*Eumetopias jubatas*) and Humpback whale (*Megaptera novaeangliae*), both Federal- and State-listed endangered species, have been observed within the 15-mile TDL . The Short-tailed albatross (*Phoebastria albatrus*), a Federal- and State-listed endangered species, has been observed in the vicinity of Atka. The Stellars Eider (*Polysticta stelleri*), a Federal- and State-listed threatened species, is known to use areas within the 15-mile TDL. The Northern Sea-Otter (*Enhydra lutris*), a Federal-listed candidate species, is known to use the near-shore areas within the 15-mile TDL. Surface waters within the 15-mile TDL are used as a migratory corridor for Pink salmon (*Oncorhynchus gorbuscha*), Coho salmon (*Oncorhynchus kisutch*), and Sockeye salmon (*Oncorhynchus nerka*). (Herrera 2002)

The Alaska Maritime National Wildlife Refuge is located on all public-owned lands in the coastal waters and adjacent areas of Alaska. According to the U.S. Fish and Wildlife Service (USFWS), several areas of public-owned lands exist within 10 miles of the site (Herrera 2002; USGS 1959). It is assumed that portions of the Alaska Maritime National Wildlife Refuge are located within the 15-mile TDL of the PPE (Herrera 2002; USGS 1959).

1.2.3.2.3 Soil Exposure Pathway

The soil exposure pathway is evaluated based on the threat to resident and nearby populations from soil contamination within the first two feet of the surface. No people live, reside, or work at the site. The site is not fenced and is accessible to residents of Atka from a 10-mile all-terrain vehicle road. Local residents are known to conduct subsistence food-gathering activities (Golodoff 2005). No sensitive terrestrial environments are known to occur at the site (Herrera 2002). No resources such as commercial agriculture, silviculture, or livestock production occur at the site.

1.2.3.2.4 Air Migration Pathway

The air migration pathway TDL is a 4-mile radius that extends from the sources at the site (Figure 1-5). No people live on or within four miles of the site. There are no workers on site. There are no sensitive terrestrial environments within 200 feet of known or suspected contamination. No commercial agriculture, commercial silviculture, or major or designated recreation areas are present within four miles of the site. No other sensitive environments are known to occur within 4 miles of the site (Golodoff 2005).

The Aleutian Islands Wilderness Area is located approximately 15 miles southwest of the site (USGS 1959). The Alaska Maritime National Wildlife Refuge is located on all public-owned lands in the coastal waters and adjacent seas of Alaska. According to the USFWS, several areas of public-owned lands exist within 10 miles of the site (Herrera 2002; USGS 1959). No wetlands are known to exist within four miles of the site; National Wetland Inventory information in the vicinity of the site is not available (Herrera 2002).

1.2.3.3 Areas of Potential Contamination

Sampling under the ACK PA/SI will be conducted at those areas considered potential contamination sources and at areas that may have been contaminated through the migration of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-regulated hazardous substances from sources on site. Based on a review of background information and discussions with site representatives, the following areas or features have been identified for inspection under the ACK PA/SI:

Sources

- **Site Soils.** Soil contaminated by past leaks or spills may be a source of contamination. SVOC, PCB, and TAL metal contamination has been found at various locations at the site. This investigation will assist in further delineating surface soil contamination at the site. Potential contaminants of concern include TAL metals, pesticides/PCBs, SVOCs, and VOCs.
- **Drums.** Discarded drums from past site activities exist at the site. This investigation will assist in determining whether open/breached drums containing primarily rain/melt water contain residual SVOCs contamination related to petroleum and are a source of contamination to adjacent soils. Probable potential contaminants of concern include SVOCs.

Targets

- **Surface Water.** Surface water has potentially been impacted by on-site sources. This investigation will assist in determining if surface water on the site, if present, has elevated concentrations of contaminants. Potential contaminants of concern include TAL metals, PCBs, SVOCs, and VOCs.
- **Sediments.** Sediments have potentially been impacted by on-site sources. This investigation will assist in determining whether sediments on and near the site, if present, have elevated concentrations of contaminants. Potential contaminants of concern include TAL metals, PCBs, SVOCs, and VOCs.

1.3 PROJECT/TASK DESCRIPTION AND SCHEDULE

This subsection provides the project description (subsection 1.3.1) and proposed schedule (subsection 1.3.2).

1.3.1 Project Description

This subsection defines the objectives and scope for performing PA/SI activities at the ACK site. The main goals for the PA/SI activities are as follows:

- Collect and analyze samples to characterize the potential sources discussed in subsection 1.2.3.3;
- Determine potential for off-site migration of contaminants;
- Provide the EPA with adequate information to determine whether the site is eligible for placement on the National Priorities List (NPL); and
- Document a threat or potential threat to public health or the environment posed by the site.

1.3.2 Schedule

The schedule for implementing the ACK PA/SI is intended to be used as a guide. Adjustments to the implementation dates and the estimated project duration may be necessary to account for variable unforeseen or unavoidable conditions that the field team may encounter. Examples include inclement weather, difficulties in accessing a sampling site, unforseen site conditions, or additional time needed to complete a task. Significant schedule changes that arise in the field will be discussed with the TM at the earliest possible opportunity.

The START-2 is targeting July 30, 2005, as the earliest period to conduct the PA/SI field work, which is estimated to take 6 days, including travel time to and from the site. This period comprises 1.5 days of mobilization, 1.5 days of demobilization, and 3 days to complete field activities. Work will be conducted during daylight hours only. The proposed schedule of project work is as follows:

SCHEDULE		
Activity	**Start**	**Complete**
Collection of Pertinent Background Information	February 24, 2005	May 20, 2005
Mobilization to Site	July 30, 2005	July 31, 2005
Sample Collection Activities	July 31, 2005	August 3, 2005
Laboratory Receipt of Samples	August 6, 2005	August 8, 2005
Demobilization from Site	August 3, 2005	August 4, 2005
Laboratory Analysis	August 8, 2005	September 8, 2005
Data Validation	September 9, 2005	September 30, 2005
Writing of Project Report	August 10, 2005	October 15, 2005
Target Project Completion Date	Not applicable	October 31, 2005

1.4 QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

The project data quality objectives (DQOs) are to provide valid data of known and documented quality to characterize sources, to determine off-site migration of contaminants, to determine whether the site is eligible for placement on the NPL, and to document threat(s) or potential threat(s) to public health or the environment posed by the site. The DQO process applied to this project follows that described in the document *Guidance for the Data Quality Objectives Process* (EPA 2000). See subsection 2.5 for a detailed measurement criteria discussion.

1.4.1 DQO Data Categories

All samples collected under this SQAP will be analyzed using definitive analytical methods. All definitive analytical methods employed for this project will be methods approved by the EPA. The data generated under this project will comply with the requirements for this data category as defined in *Data Quality Objectives Process for Superfund* (EPA 1993).

1.4.2 Data Quality Indicators (DQIs)

DQI precision, accuracy, representativeness, comparability, and completeness goals for this project were developed following guidelines presented in the EPA *Guidance for Quality Assurance Project Plans*, EPA QA/G-5 (EPA 2002).

The basis for assessing each of the elements of data quality is discussed in the following subsections. Subsection 2.5 presents the QA objectives for measurement of analytical data and Quality Control (QC) guidelines for precision and accuracy. Other DQI goals are included in the individual Standard Operating Procedures (SOPs) in Appendix A and in the Laboratory Statement of Work (SOW).

1.4.2.1 Representativeness

Representativeness is a measure of the degree to which data accurately and precisely represents a population, including a sampling point, a process condition, or an environmental condition. Representativeness is the qualitative term that should be evaluated to determine that measurements are made, and physical samples collected, at locations and in a manner resulting in characterizing a matrix or media. Subsequently, representativeness is used to ensure that a sampled population represents the target population and an aliquot represents a sampling unit. This SQAP will be implemented to establish representativeness for this project. Further, all sampling procedures detailed in the SQAP will be followed to ensure that the data will be representative of the media sampled. The SQAP describes the sample location, sample collection, and handling techniques that will be used to avoid contamination or compromise sample integrity, and proper chain-of-custody of samples. Additionally, the sampling design presented in the SQAP will ensure that there are a sufficient number of samples and level of confidence that analysis of these samples will detect the chemicals of concern, if present.

1.4.2.2 Comparability

Comparability is the qualitative term that expresses the measure of confidence that two data sets or batches can contribute to a common analysis and evaluation. Comparability with respect to laboratory

analyses pertains to method type comparison, holding times, stability issues, and aspects of overall analytical quantitation. The following items are evaluated when assessing data comparability:

- Determining if two data sets or batches contain the same set of parameters.
- Determining if the units used for each data set are convertible to a common metric scale.
- Determining if similar analytical procedures and quality assurance were used to collect data for both data sets.
- Determining if the analytical instruments used for both data sets have approximately similar detection levels.
- Determining if samples within data sets were selected and collected in a similar manner.

To ensure comparability of data collected during this investigation to other data that may have been or may be collected for each property, standard collection and measurement techniques will be used.

1.4.2.3 Completeness

Completeness is calculated for the aggregation of data for each analyte measured for any particular sampling event or other defined set of samples. Completeness is calculated and reported for each method, matrix, and analyte combination. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set. For completeness requirements, valid results are all results not rejected through data validation. The requirement for completeness is 95% for aqueous samples and 90% for soil and sediment samples.

The following formula is used to calculate completeness:

$$\% \text{ completeness} = \frac{\text{number of valid results} \times 100}{\text{number of possible results}}$$

For any instances of samples that could not be analyzed for any reason (holding time violations in which resampling and analysis were not possible, samples spilled or broken, etc.), the numerator of this calculation becomes the number of valid results minus the number of possible results not reported.

For this investigation, all samples are considered critical. Therefore standard collection (as defined in the sampling SOPs of Appendix A) and measurement methods will be used to achieve the completeness goal.

1.4.2.4 Precision

Precision measures the reproducibility of measurements. It is strictly defined as the degree of mutual agreement among independent measurements as the result of repeated application of the same process under similar conditions. *Analytical* precision is the measurement of the variability associated with duplicate (two) or replicate (more than two) analyses. The laboratory control sample (LCS) determines the precision of the analytical method. If the recoveries of the analytes in the LCS are within established control limits, then precision is within limits. In this case, the comparison is not between a sample and a duplicate sample analyzed in the same batch. Rather, the comparison is between the sample and samples analyzed in previous batches.

Total precision is the measurement of the variability associated with the entire sampling and analysis process. It is determined by analysis of duplicate or replicate field samples and measures variability introduced by both the laboratory and field operations. Field duplicate samples and matrix duplicate spiked samples shall be analyzed to assess field and analytical precision, and the precision measurement is determined using the relative percent difference (RPD) between the duplicate sample results.

The following formula is used to calculate precision:

$$RPD = (100) \times \frac{(S1 - S2)}{(S1 + S2)/2}$$

where:

S1 = original sample value

S2 = duplicate sample value

1.4.2.5 Accuracy

Accuracy is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and systemic error. It reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ from the true value or known concentration of the spike and standard. Analytical accuracy is measured by comparing the percent recovery of analytes spiked into an LCS to a control limit. For pesticide, PCB, volatile, and semivolatile organic compounds, system monitoring compound recoveries are also used to assess

accuracy and method performance for each sample analyzed. Analysis of performance evaluation (PE) samples may also be used to provide additional information for assessing the accuracy of the analytical data being produced.

1.5 SPECIAL TRAINING REQUIREMENTS/CERTIFICATION

No special training requirements or certifications are required for this project except for the 40-hour Hazardous Waste Operations and Emergency Response class and annual refreshers. Health and safety procedures for E & E personnel are addressed in the E & E site-specific Health and Safety Plan. This document is maintained in E & E's Seattle office. Included in the plan are descriptions of anticipated chemical and physical hazards, required levels of protection, health and safety monitoring requirements and action levels, personal decontamination procedures, and emergency procedures.

1.6 DOCUMENTATION AND RECORDS

This document is meant to be combined with information presented in E & E's (2001b) *Region 10 START-2 Quality Assurance Project Plan*. This information is covered by the SOPs found in Appendix A and the supplemental forms found in Appendix B. A copy of the START QAPP is available in E & E's Seattle office. Standards contained in the SOPs, the START QAPP, and the QMP will be used to ensure the validity of data generated by E & E for this project.

Following the completion of field work and the receipt of analytical data, a report summarizing project findings will be prepared. Project files, including work plans, reports, analytical data packages, correspondence, chain-of-custody documentation, logbooks, corrective action forms, referenced materials, and photographs, will be provided to the EPA TM at the close of the project. Further, a CD-ROM deliverable containing the final report will be provided.

E & E will assemble and fully document a digital data set including all project sampling, analysis, and observation data. This digital data will be made available in a Microsoft-Access format. E & E will transfer this data set and documentation to EPA, or if requested, to any other EPA contractor, and shall ensure that any data transferred is received in an uncorrupted, comprehensible, and usable format. Specific data deliverable elements are presented below.

Data

A summary description of the tables, the sources of information, and other comments are provided below.

Field-Info

The field information table contains all sample collection related information. A Microsoft Access application (Sample Information System, SIS) will be used to input and store the data. The SIS provides the user with "smart" data input forms that will only allow for the entry of acceptable data field values. For each sampling event, the SIS will be updated to reflect the new samples collected. Once entered, the information will be checked and corrected where necessary. The table structure is presented below.

Field Name	Type	Size	Description
Sample-num	Character	10	Sample Number
Station	Character	10	Station Identifier
Date	Date	8	Sample Date
Time	Numeric	4	Sample Time (24 hour clock)
Sampler	Character	25	Person name
Matrix	Character	6	Sample Matrix – (i.e. soil boring, groundwater, sediment)
Water Depth	Numeric	5.1	Depth of water at sediment sample
Description	Character	40	Sample Description
Comments	Character	40	Comments

Location

The location table contains sample location coordinate information. The sample locations will be determined using Trimble Pro-XR Global Positioning System (GPS) units. E & E personnel have been trained and have utilized these units in similar projects. For each day or half-day in the field that GPS sample location data is to be collected, the GPS user will create a single file that contains the locations of each sample station. A unique station label will be entered for each sample location. This unique station identifier will be used to link the "Location" table with the "Field-Info" table. This information will be downloaded from the GPS unit and imported into the "Location" table of the Site Data Management System (SDMS). All locational data for this project will be stored in decimal degrees, and will be

referenced to the North American Datum (NAD) 27 horizontal datum. Differential corrections will be made real-time. The table structure is presented below.

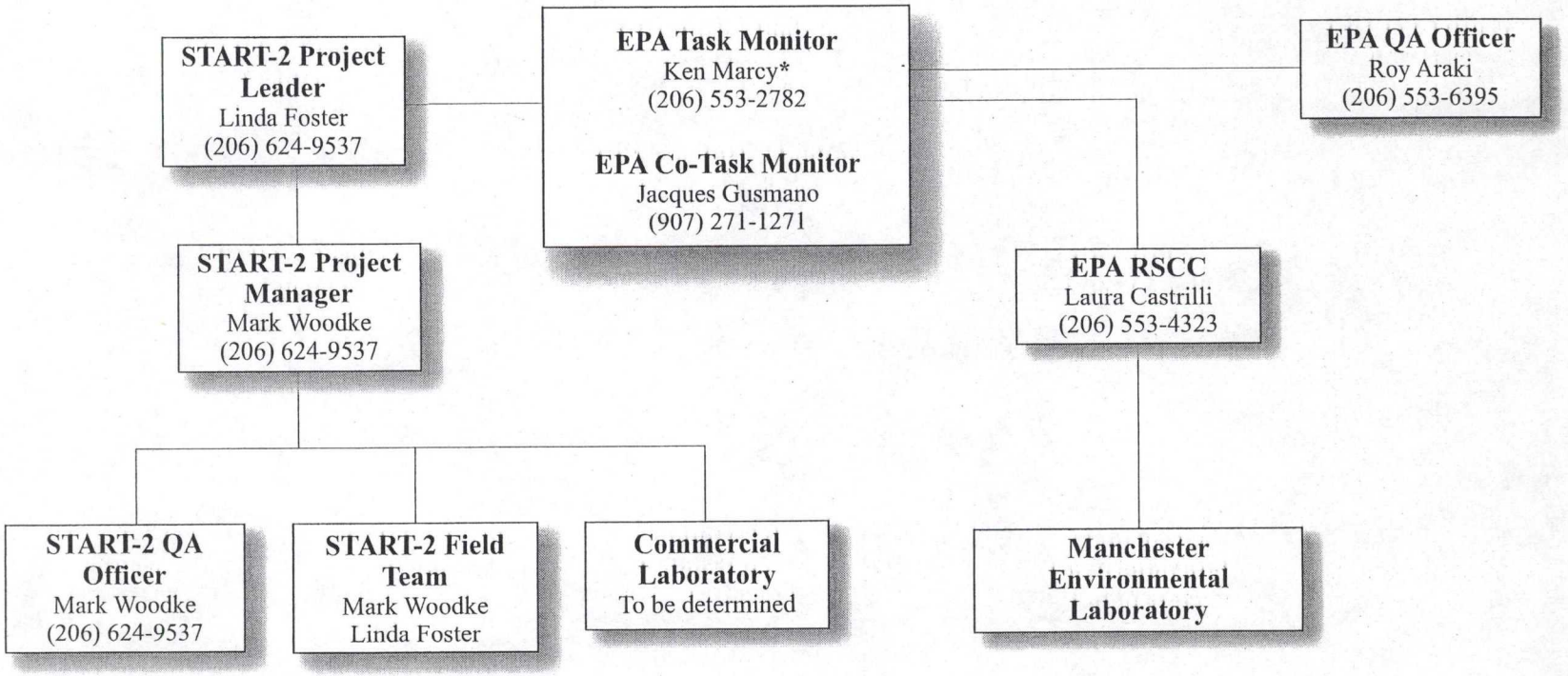
Field Name	Type	Size	Description
Station	Character	10	Station Identifier
X-Coord	Numeric	12.6	X-Coordinate, Decimal Degrees
Y-Coord	Numeric	12.6	Y-Coordinate, Decimal Degrees

Lab Analytical

The Lab Analytical table will hold all of the sample analysis results provided by each laboratory analyzing samples. The integrity of each data file received from the labs will be checked and verified. Once the files are received, they will be appended into the SDMS Lab Analytical table. The "Sample-num" field will be used to link the "Lab Analytical" table with the "Field-Info" table. The table structure is presented below.

Field Name	Type	Size	Description
Sample-num	Character	10	Sample Number
Lab-id	Character	10	Laboratory Sample Identifier
Method	Character	25	Analytical Method used
L-Matrix	Character	10	Laboratory Matrix
Cas-num	Character	15	Chemical Abstracts Service (CAS) number
Analyte	Character	40	Analyte Name
Result	Numeric	12.6	Analysis result
Qual	Character	6	Sample qualifier
Quantitation-Limit	Numeric	12.6	Sample quantitation limit
Units	Character	10	Result units
Date	Date	8	Date Analyzed
Lab	Character	40	Lab name

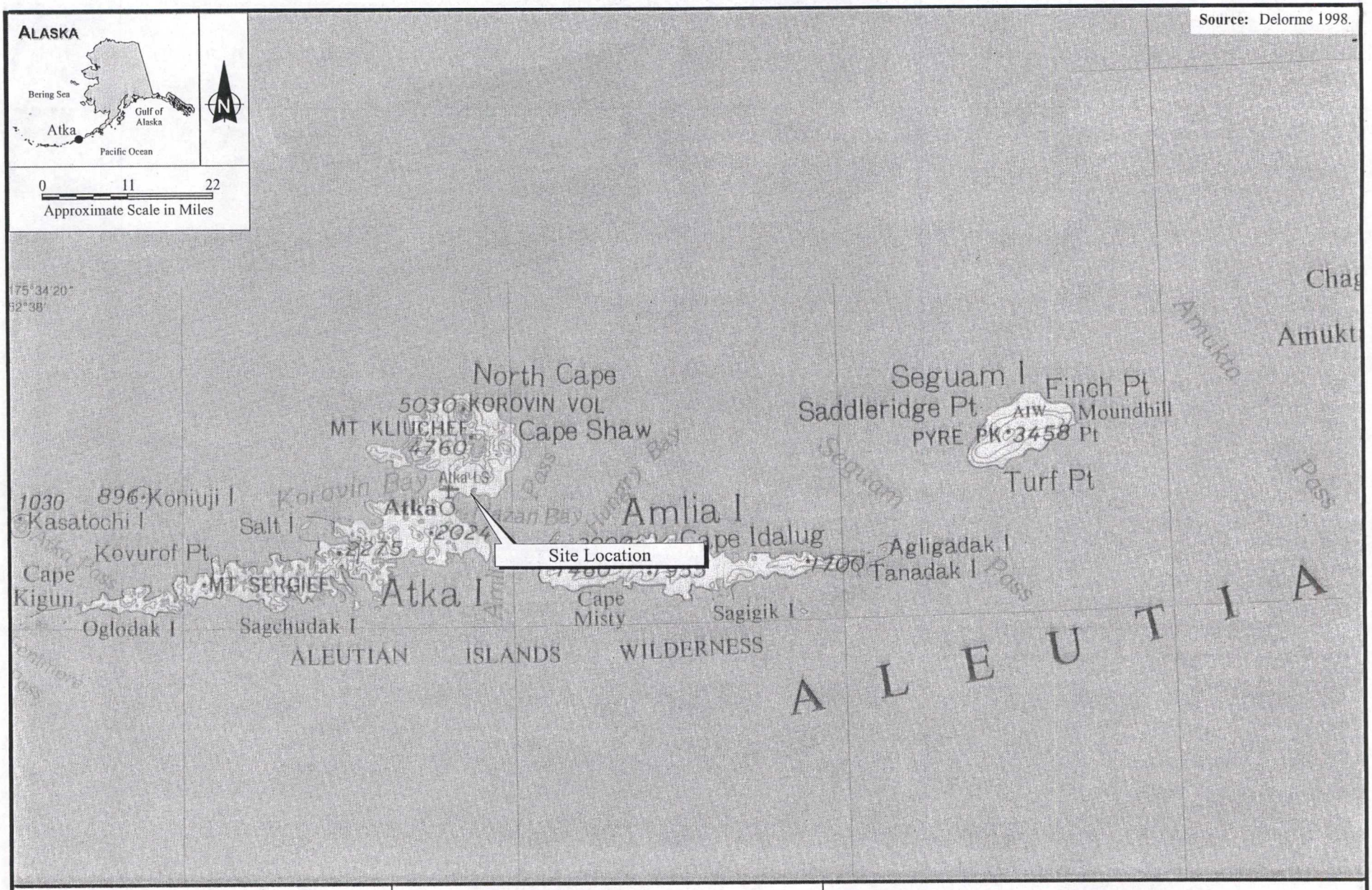
For any Geographic Information Systems (GIS) produced maps, E & E shall provide the maps to EPA in hard copy and digital image (i.e. JPEG) formats.



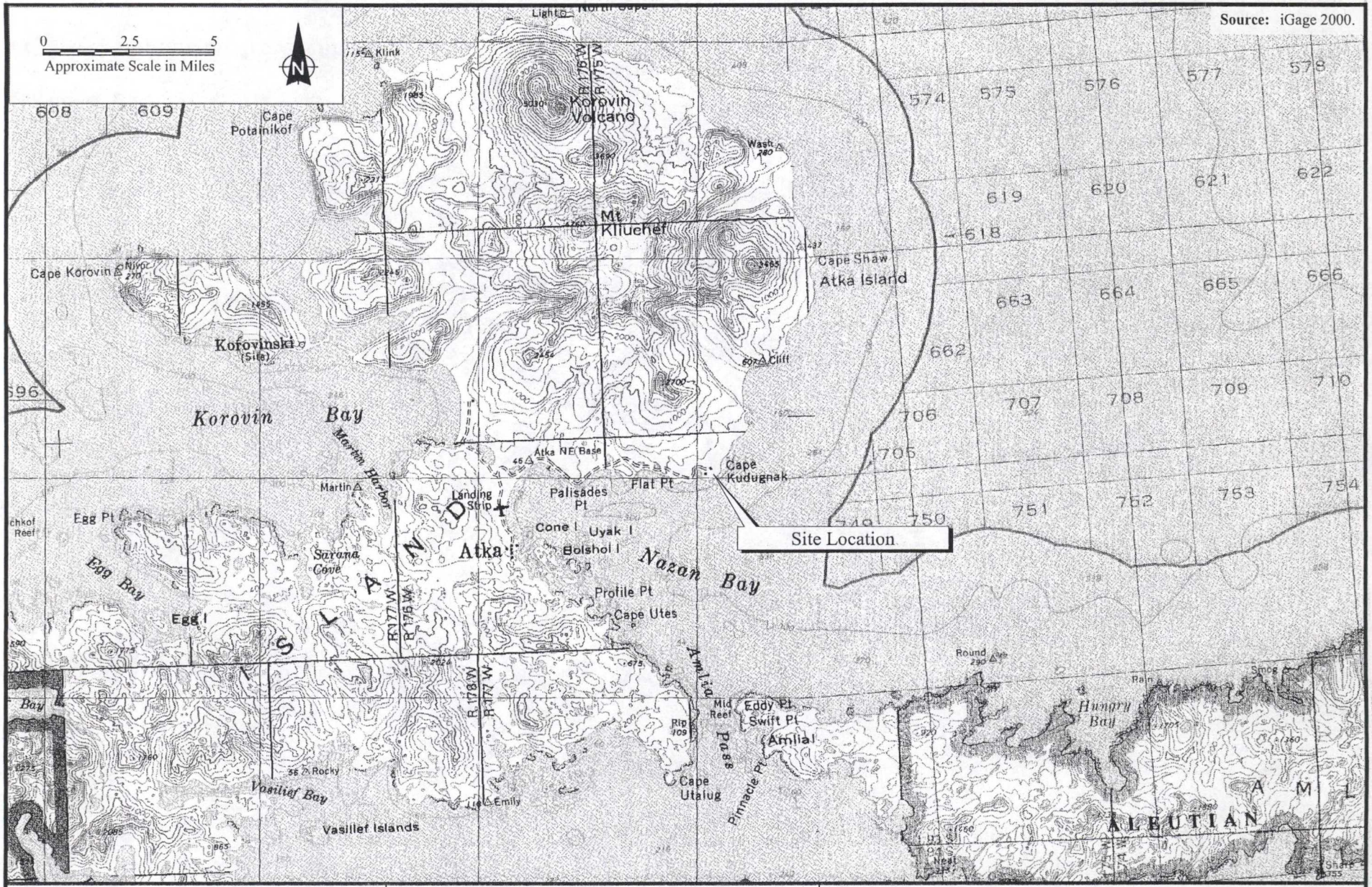
KEY:

* Approving Authority

ecology and environment, inc. International Specialists in the Environment Seattle, Washington	ATKA CAPE KUDUGNAK PRELIMINARY ASSESSMENT/ SITE INSPECTION Atka Island, Alaska	Figure 1-1 PROJECT ORGANIZATION CHART
		Date: 7/19/05 | Drawn by: AES | 10:START-2\03080006\fig 1-1



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	ATKA CAPE KUDUGNAK PRELIMINARY ASSESSMENT/ SITE INSPECTION Atka Island, Alaska	Figure 1-2 SITE VICINITY MAP
		Date: 7/19/05 | Drawn by: AES | 10:START-2\03080006\fig 1-2



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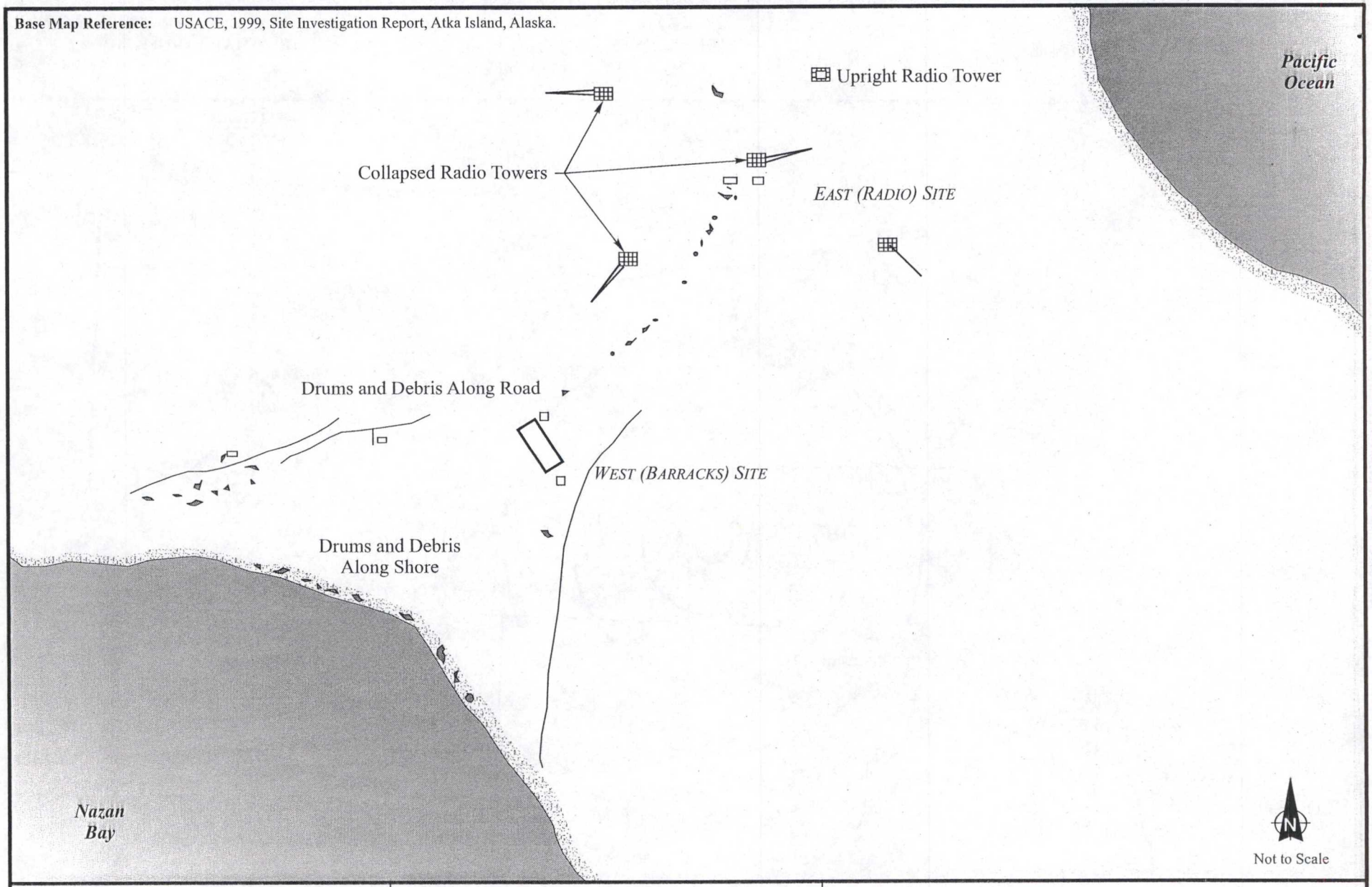
PRELIMINARY ASSESSMENT/
SITE INSPECTION
Atka Island, Alaska

Figure 1-3
SITE LOCATION MAP

Date:	Drawn by:	
7/19/05	AES	10:START-2\03080006\fig 1-3

Base Map Reference: USACE, 1999, Site Investigation Report, Atka Island, Alaska.



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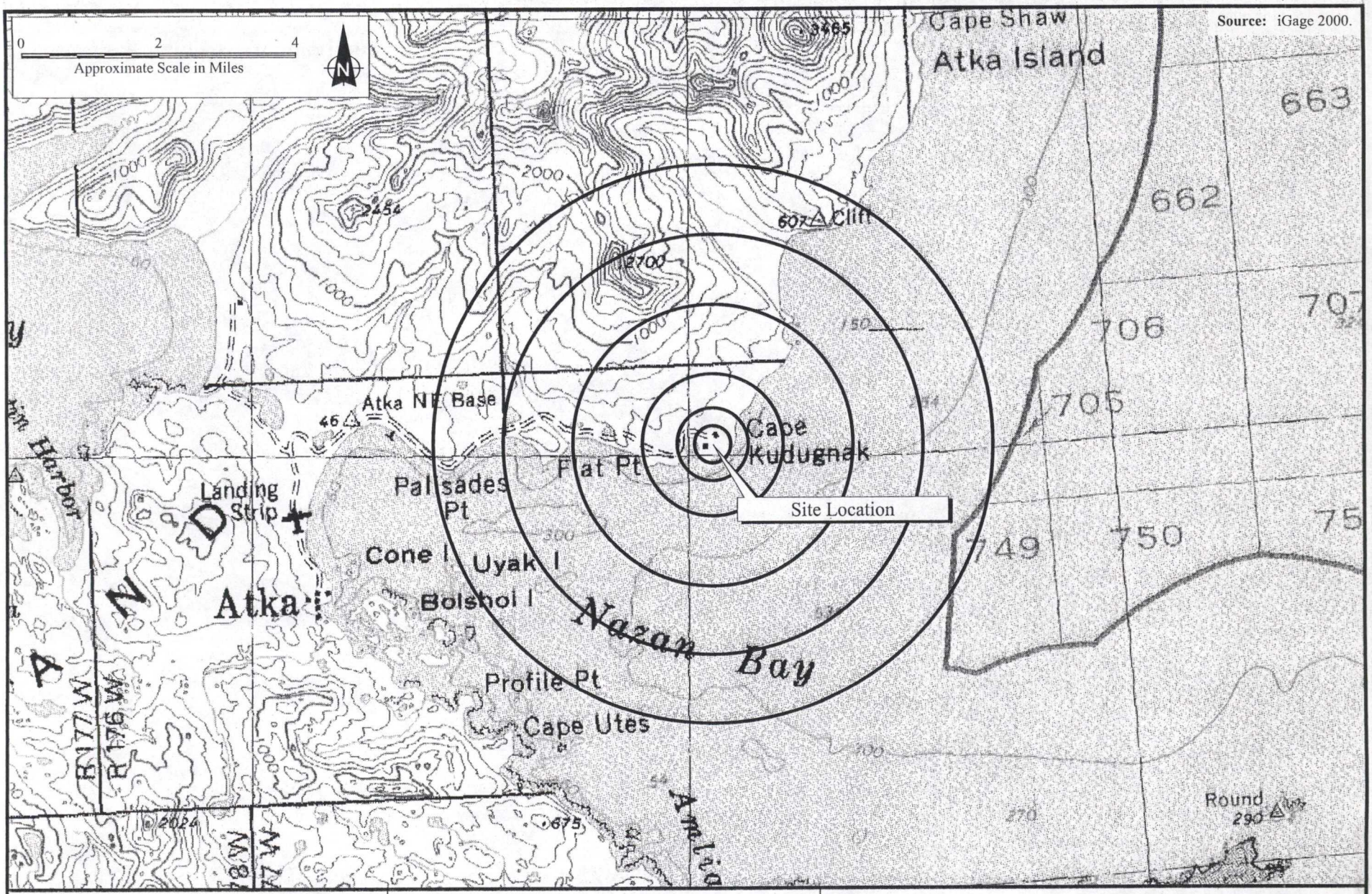
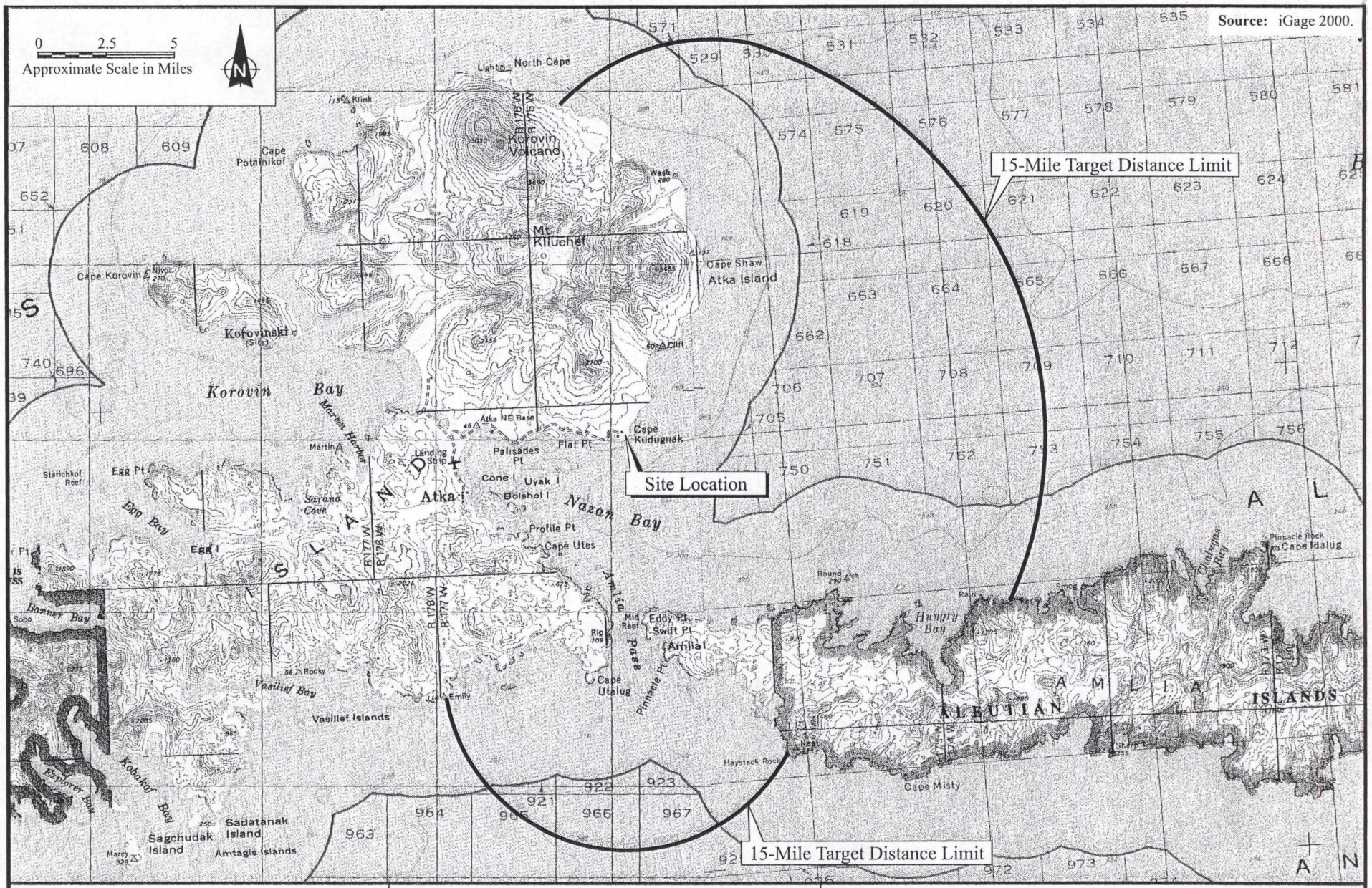
PRELIMINARY ASSESSMENT/
SITE INSPECTION
Atka Island, Alaska

Figure 1-4
SITE MAP

Date:	Drawn by:	
7/19/05	AES	10:START-2\03080006\fig 1-4



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	ATKA CAPE KUDUGNAK PRELIMINARY ASSESSMENT/ SITE INSPECTION Atka Island, Alaska	Figure 1-5 4-MILE MAP
		Date: 7/19/05 | Drawn by: AES | 10:START-2\03080006\fig 1-5



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Atka Island, Alaska

Figure 1-6
15-MILE MAP

Date:	Drawn by:	
7/19/05	AES	10:START-2\03080006\fig 1-6

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intentionally left blank.

2. MEASUREMENT/DATA ACQUISITION

2.1 SAMPLING PROCESS DESIGN (EXPERIMENTAL DESIGN)

During the ACK PA/SI, samples will be collected from locations or features considered potential contamination sources, from selected potential hazardous substance migration pathways, and from potential targets in those pathways. The locations or features to be sampled have been determined based on information derived from a review of background information and interviews with site representatives and regulatory agencies. Table 2-1 provides sample information regarding the sampling design and whether the measurement is considered critical or noncritical.

At the time of sampling, site-specific conditions (e.g., topography or visual evidence of contamination) will be evaluated and incorporated, when applicable, into the placement of sampling locations. Other conditions potentially contributing to deviations from the projected sampling locations include new observations or information obtained in the field that warrant an altered sampling approach, difficulty in reaching a desired soil sampling depth caused by high density soil, obstructions, or limited access to a sampling location. Significant deviations from the planned sampling locations or number of samples to be collected will be discussed with the EPA TM before implementation and will be documented on a Sample Plan Alteration Form (SPAF-Appendix B). Every attempt will be made to collect representative samples with the equipment being used.

This subsection will describe sample locations (subsection 2.1.1), the GPS (subsection 2.1.2), logistics (subsection 2.1.3), cooler return (subsection 2.1.4), and coordination with federal, state, and local authorities (subsection 2.1.5).

2.1.1 Sample Locations

Sample locations have been selected to achieve the objectives discussed in subsection 1.3.1. All samples (except drum water samples) will be submitted for off-site fixed laboratory analysis for TAL

metals (Contract Laboratory Program Analytical Services [CLPAS] ILM05.3 [EPA 2004c] and/or EPA SW-846 Methods 6010C/6020A/6200/7000 Series), VOCs (CLPAS OLM04.3 [EPA 2003] and/or EPA SW-846 Methods 5035/8260B), SVOCs (CLPAS OLM04.3 [EPA 2003] and/or EPA SW-846 Method 8270D), pesticides (CLPAS OLM04.3 [EPA 2003] and/or EPA SW-846 Method 8081B), and PCBs (CLPAS OLM04.3 [EPA 2003] and/or EPA SW-846 Method 8082A). Open drum (residual water containing petroleum) samples will be analyzed for SVOCs (CLPAS OLM04.3 [EPA 2003] and/or EPA SW-846 Method 8270D) only. Table 2-2 presents the anticipated number and types of samples, analytical methods, specific requirements for sample container size and type, sample preservation and holding times, and special handling requirements for samples expected to be collected at the site. Table 2-3 summarizes the number of QA/QC samples to be submitted according to the method requirements. Some proposed sample locations are illustrated in Figure 2-1; additional locations will be determined on site. A summary of sampling locations and rationale is provided below:

- **Contaminated Soils.** Contaminated soils potentially exist at the site from historical activities. Up to 20 surface soil samples will be collected from drum disposal areas, automotive battery disposal areas, AST areas, the power plant, and other areas of stained soil.
- **Drums.** Up to 10 samples will be collected from open or breached drums containing liquids (rain/melt water possibly containing residual contamination).
- **Surface Water and Sediments.** Surface water may have been impacted by potential sources on site. Up to two surface water samples will be collected from up to two creeks on site if any are present. Creek sediments, which may have been impacted by potential sources on site, will be sampled. Up to two sediment samples will be collected from each creek if any are present, and up to two creeks will be sampled. Samples will be collected from 0 to 6 inches below ground surface (bgs).
- **Background Samples.** One representative background surface soil sample having similar characteristics to the on site surface soil samples will be collected. One background surface water and one background sediment sample will be collected from each creek sampled at least 50 feet upstream of the most upgradient PPE. A visual grain-size analysis will be conducted on all soil and sediment samples to help ensure adequate comparability of sample results.

2.1.2 Global Positioning System

GPS units with data loggers will be used to identify the location coordinates of every sample collected, as well as to delineate the boundaries of the potential source areas. GPS coordinates will be provided in the final ACK PA/SI report as an appendix. If real-time coordinates cannot be obtained for

the site, the START-2 will obtain differential correction data from a local source prior to the start of the survey in order to improve the survey resolution.

2.1.3 Logistics

The ACK site is accessible by a one-lane, all-terrain vehicle (ATV) road, however, the road's condition would be treacherous for an inexperienced ATV driver. For this reason, the START-2 will hire a boat and driver to reach the site from Atka and also an experienced ATV driver to shuttle supplies back and forth from the beach to the site. The START-2 was informed that, because of unpredictable weather conditions, traveling by aircraft to the site may be difficult and delays could be expected. Field equipment will be shipped to Atka by commercial and/or chartered airlines. All property owners have provided written consent to access their properties for ACK PA/SI activities.

Sample aliquots collected for fixed laboratory analysis will be delivered to the EPA Region 10 laboratory or an alternative laboratory as directed by the EPA. All fixed-laboratory samples will be shipped at the end of field work by for express delivery. Sample control and shipping are discussed in subsection 2.3.

2.1.4 Cooler Return

For laboratories other than the EPA MEL, E & E will provide completed air bills accompanied by plastic envelopes with adhesive backs and address labels in the chain-of-custody bags taped to the inside of the cooler lids so the laboratory can return the coolers to E & E. The air bills will contain the following notation: "Transportation is for the United States Environmental Protection Agency, and the total actual transportation charges paid to the carrier(s) by the consignor or consignee shall be reimbursed by the Government, pursuant to cost reimbursement contract number 68-S0-01-01." This notation will enable the laboratories to return the sample coolers to E & E's warehouse. The air bills will be marked for second-day economy service and will contain the appropriate TDD number for shipment.

For the EPA MEL laboratory, an arrangement by E & E for cooler return in this manner is not required.

2.1.5 Coordination with Federal, State, and Local Authorities

The START-2 will keep the EPA TM informed of field event progress and issues that may affect the schedule or outcome of the PA/SI, will discuss problems encountered, will inform the EPA of unusual contacts with the public or the media, and will obtain guidance from the EPA regarding project activities when required if phone service is available in the area. Additionally, the START-2 will notify the EPA RSCC with changes to the sampling schedule for MEL and/or CLP analyses and will provide shipping information on every sample shipment within 24 hours of shipment or before noon on Friday for Saturday delivery. All samples will be shipped to the laboratory within 72 hours of sample collection unless severe weather prevents sample shipment. In all instances, samples will be shipped as soon as possible after sample collection.

Before initiation of the PA/SI field activities, the START-2 will provide notification to the APIA, the ANC, and the KIC.

2.2 SAMPLING METHOD REQUIREMENTS

This subsection describes sampling methodologies (subsection 2.2.1), sampling equipment decontamination (subsection 2.2.2), investigation-derived waste (IDW; subsection 2.2.3), and SOPs (subsection 2.2.4).

2.2.1 Sampling Methodologies

The START-2 PM and EPA TM will be responsible for ensuring that appropriate sample collection procedures are followed and will take appropriate actions to correct the deficiencies. All samples collected will be maintained under chain-of-custody and will be stored and shipped in iced coolers.

- **Surface Soil Sampling.** Surface soil (0 to 6 inches bgs) will be collected using dedicated stainless steel spoons. Collected material will be placed in a dedicated stainless steel bowl, thoroughly homogenized when applicable, and placed into a prelabeled sample container. The VOC aliquots will be collected directly into sample vials/jars.
- **Drum Sampling.** If any breached or open drums or containers are found with rain/melt water potentially containing residual contamination, the water from the drums will be

collected by inserting a dedicated coliwassa sampling rod into the drum, then releasing the water directed in the prelabeled sample containers.

- **Surface Water Sampling.** Surface water samples will be collected by dipping sample containers into the surface water body. Collected material will be placed into prelabeled sample containers. Surface water samples will be collected starting with the downstream samples. Co-located surface water samples will be collected before any co-located sediment samples.
- **Sediment Sampling.** Sediment samples will be collected by using dedicated plastic/Teflon spoons or trowels. The collected sediment will be homogenized thoroughly in dedicated plastic/Teflon bowls when applicable and placed into prelabeled sample containers. The VOC aliquots will be collected directly into sample vials/jars.

2.2.2 Sampling Equipment Decontamination

Disposable and/or dedicated personal protective and sampling equipment will be used to avoid cross-contamination. Decontamination procedures will not be required.

2.2.3 Investigation-Derived Waste

The START-2 field team members will make every effort to minimize the generation of IDW throughout the field event. Disposable personal protective clothing and sampling equipment generated during field activities will be rendered unusable by tearing (when appropriate), bagged in opaque plastic garbage bags, and disposed of at a municipal landfill.

2.2.4 Standard Operating Procedures

The START-2 will utilize the following SOPs (Appendix A) while performing field activities:

- Field Activity Logbooks;
- Sediment Sampling,
- VOC-Soil and Sediment Sampling,
- Soil Sampling,
- Surface Water Sampling, and
- Sample Packaging.

2.3 SAMPLE HANDLING AND CUSTODY REQUIREMENTS

This subsection describes sample identification and chain-of-custody procedures that will be used for the ACK PA/SI field activities. The purpose of these procedures is to ensure that the quality of the samples is maintained during collection, transportation, storage, and analysis. All chain-of-custody requirements comply with E & E's SOPs for sample handling. All sample control and chain-of-custody procedures will follow the EPA's (2004b) *Contract Laboratory Program Guidance for Field Samplers*.

Examples of sample documents used for custody purposes are provided in Appendix C (with the exception of field logbooks) and include the following:

- Sample identification numbers,
- Sample tags or labels,
- Custody seals,
- Chain-of-custody records and traffic reports,
- Field logbooks,
- Sample collection forms, and
- Analytical request forms.

During the field effort, the site manager or delegate is responsible for maintaining an inventory of these sample documents. This inventory will be recorded in a cross-referenced matrix of the following:

- Sample location,
- Sample identification number,
- Analyses requested and request form number(s),
- Chain-of-custody record numbers,
- Bottle lot numbers, and
- Air bill numbers.

Brief descriptions of the major sample identification and documentation records and forms are provided below.

2.3.1 Sample Identification

All samples will be identified using the sample numbers assigned by the EPA RSCC. Each sample label will be affixed to the jar and covered with clear tape. A sample tracking record will be kept as each sample is collected. The following will be recorded: location, matrix, sample number, observations, and depth. In addition to the EPA-assigned sample number, samples will be tracked with a sample code system designed to allow easy reference to the sample's origin and type. The sample code key will not be provided to the laboratory. Table 2-4 summarizes the sample tracking and location codes.

2.3.1.1 Sample Tags and Labels

Sample tags attached to or fixed around sample containers will be used to identify all samples collected in the field. The sample tags will be placed on bottles so as not to obscure any QA/QC lot numbers on the bottles, and sample information will be printed legibly. Field identification will be sufficient to enable the information to be cross-referenced with the project logbook. For chain-of-custody purposes, all QA/QC samples will be subject to the same custodial procedures and documentation as site samples.

To minimize handling of sample containers, labels will be completed before sample collection to the extent possible. In the field, the labels will be filled out completely using waterproof ink, then attached firmly to the sample containers and protected with clear tape. The sample labels will provide the following information:

- Sample number,
- Sample location number,
- Date and time of collection,
- Analysis required, and
- pH and preservation (when applicable).

2.3.1.2 Custody Seals

Custody seals are preprinted gel-type seals, designed to break into small pieces if the seals are disturbed. Sample shipping containers (e.g., coolers, drums, cardboard boxes, etc., as appropriate) will be sealed in as many places as necessary to ensure security. Seals will be signed and dated before use. Clear tape will be placed over the seals to ensure that the seals are not broken accidentally during shipment. Upon receipt at the laboratory, the custodian will check (and certify by completing the package receipt log) that seals on shipping containers are intact.

2.3.1.3 Chain-of-Custody Records and Traffic Reports

For samples to be analyzed at the EPA MEL or at a CLP laboratory, the chain-of-custody records, analyses required forms, and/or analytical traffic report forms will be completed as described in the *Contract Laboratory Program Guidance for Field Samplers* (EPA 2004b). The EPA's FORMS II Lite software will be used to electronically enter information for the chain-of-custody and traffic report forms. The chain-of-custody record, analyses required forms, and analytical traffic reports will be completed fully at least in duplicate by the field technician designated by the site manager as responsible for sample shipment to the appropriate laboratory. Information specified on the chain-of-custody record will contain the same level of detail found in the site logbook, except that the on-site measurement data will not be recorded. The custody record will include the following information:

- Name and company or organization of person collecting the samples,
- Date samples were collected,
- Type of sampling conducted (composite or grab),
- Sample number (using those assigned by the EPA RSCC),
- Location of sampling station (using the sample code system described in Table 2-4),
- Number and type of containers shipped,
- Analysis requested, and
- Signature of the person relinquishing samples to the transporter, with the date and time of transfer noted and signature of the designated sample custodian at the receiving facility.

If samples require rapid laboratory turnaround, the person completing the chain-of-custody record(s) will note these or similar constraints in the remarks section of the custody record.

The relinquishing individual will record all shipping data (e.g., air bill number, organization, time, and date) on the original custody record, which will be transported with the samples to the laboratory and retained in the laboratory's file. Original and duplicate custody records, together with the air bill(s) or delivery note(s), constitute a complete custody record. It is the site manager's responsibility to ensure that all records are consistent and that they become part of the permanent job file.

2.3.1.4 Field Logbooks and Data Forms

Field logbooks (or daily logs) and data forms are necessary to document daily activities and observations. Documentation will be sufficient to enable participants to reconstruct events that occurred during the project accurately and objectively at a later time. All daily logs will be kept in a bound notebook containing numbered pages. All entries will be made in waterproof ink, dated, and signed. No pages will be removed for any reason.

Minimum logbook content requirements are described in the E & E SOP entitled *Field Activity Logbooks* found in Appendix A. If corrections are necessary, these corrections will be made by drawing a single line through the original entry (so that the original entry is legible) and writing the corrected entry alongside. The correction will be initialed and dated. Corrected errors may require a footnote explaining the correction.

2.3.1.5 Photographs

Photographs will be taken as directed by the team leader. Documentation of a photograph is crucial to its validity as a representation of an existing situation. The following information will be noted in the project or task log concerning photographs:

- Date, time, and location where photograph was taken,
- Photographer (signature),
- Weather conditions,
- Description of photograph taken,
- Reasons why photograph was taken,

- Sequential number of the photograph and the film roll number,
- Camera lens system used, and
- Direction.

2.3.2 Custody Procedures

The primary objective of chain-of-custody procedures is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from collection to completion of all required analyses. A sample is in custody when it is:

- In someone's physical possession,
- In someone's view,
- Locked up, or
- Kept in a secured area that is restricted to authorized personnel.

2.3.2.1 Field Custody Procedures

The following guidance will be used to ensure proper control of samples while in the field:

- As few people as possible will handle samples.
- Coolers or boxes containing cleaned bottles will be sealed with a custody tape seal during transport to the field or while in storage before use. Sample bottles from unsealed coolers or boxes, or bottles that appear to have been tampered with, will not be used.
- The sample collector will be responsible for the care and custody of collected samples until they are transferred to another person or dispatched properly under chain-of-custody rules.
- The sample collector will record sample data in the field logbook.
- The site team leader will determine whether proper custody procedures were followed during the field work and will decide if additional samples are required.

When transferring custody (i.e., releasing samples to a shipping agent), the following will apply:

- The coolers in which the samples are packed will be sealed and accompanied by two copies of the chain-of-custody record(s). When transferring samples, the individuals relinquishing and receiving them must sign, date, and note the time on each of the chain-of-custody record(s). This will document sample custody transfer.

- Samples will be dispatched to the laboratory for analysis with separate chain-of-custody records accompanying each shipment. The chain-of-custody records will be signed by the relinquishing individual, and the method of shipment, name of courier, and other pertinent information will be entered in the chain-of-custody record before placement in the shipping container. Shipping containers will be sealed with custody seals for shipment to the laboratory.
- All shipments will be accompanied by chain-of-custody records identifying their contents. The original custody records kept in a zip-locking bag and taped inside the lid of the cooler will accompany each cooler shipment. The other copies will be distributed appropriately to the site team leader and site manager.
- If sent by common carrier, a bill of lading will be used. Freight bills and bills of lading will be retained as part of the permanent documentation.

2.3.2.2 Laboratory Custody Procedures

A designated sample custodian at the laboratory will accept custody of the shipped samples from the carrier and enter preliminary information about the package into a package or sample receipt log, including the initials of the person delivering the package and the status of the custody seals on the coolers (i.e., broken versus unbroken). The custodian responsible for sample log-in will follow the laboratory's SOP for opening the package, checking the contents, and verifying that the information on the chain-of-custody agrees with the samples received. The laboratory will check the temperature blank inside the cooler and document it in the sample log-in form. Should the temperature be greater than what is required by the Statement of Work or the method, the sample custodian will inform the region and proceed to follow the course of actions stipulated in the SOW or specified by the regional QAO.

2.4 ANALYTICAL METHOD REQUIREMENTS

This subsection discusses the analytical strategy (subsection 2.4.1) and the analytical methods (subsection 2.4.2).

2.4.1 Analytical Strategy

Analysis of samples collected during the PA/SI will be performed by several possible means. The MEL (or alternative laboratory designated by the EPA) will perform all requested analyses.

The analyses to be applied to samples sent to the laboratory are listed in Table 2-2. These analyses were selected based on the probable hazardous substances used or potentially released to the environment, given the known or suspected site usage.

2.4.2 Analytical Methods

Samples designated for off-site analytical laboratory analyses will be submitted to the MEL or an alternative laboratory designated by the EPA. EPA and/or CLP laboratory analyses will take place within the standard three-week turnaround time period, with validation by the EPA QA office for these analyses taking place within the standard three-week turnaround time period. Hardcopy results from the MEL and/or CLP laboratories will be delivered to the EPA upon completion of each sample delivery group. Electronic results from the MEL and/or CLP laboratories will be delivered to the EPA upon project completion. Table 2-3 summarizes laboratory instrumentation and methods to be used for the ACK PA/SI.

For cases in which laboratory results exceed QC acceptance criteria, reextraction and/or reanalysis will occur as indicated in the applicable analytical method. The respective laboratory analysts will be responsible for ensuring that appropriate sample analysis procedures are followed and for taking appropriate actions to ensure deficiency correction.

2.5 QUALITY CONTROL REQUIREMENTS

QC checks for sample collection will be accomplished by a combination of chain-of-custody protocols and laboratory QA procedures as prescribed in the sampling or analytical methods. No QC samples (i.e., double blind performance evaluation samples) are planned for this activity outside of the normal laboratory QC criteria outlined in the analytical methods. These QC samples include blanks, calibration verifications, spikes, duplicates, interference check samples, and serial dilutions. Results from these samples will be compared to QC requirements listed in subsection 4.1.2. All of the analyses that will be performed for this project will produce definitive data. Data quality indicator targets for this project are specified in subsection 1.4 (Data Quality Objectives) and are summarized in Table 2-2 of this SQAP. Bias on estimated qualified data shall be determined by the validation process. In accordance with the objectives outlined in this document and the QA levels defined by the EPA (1993), the EPA has defined the DQOs and has determined that the sampling and analyses performed under this sampling effort will conform to the definitive data without quantitative error and bias determination criteria. The

laboratories' DQOs for completeness and the field team's ability to meet the DQO for representativeness are set at 90%. Precision and accuracy requirements are outlined in Table 2-3.

One temperature blank consisting of a 40-milliliter glass vial of distilled water will be included in each cooler shipped to the analytical laboratories. Temperature blanks allow the laboratories to obtain a representative measurement of the temperature of samples enclosed in a cooler without disturbing the actual samples. The field team will package and label the temperature blank like a regular water sample, however the analytical laboratory will only measure the temperature of the blank. The temperature blank will not be analyzed for hazardous substances, will not be given a sample number, and will not be listed on the chain of custody form. The temperature blank will be clearly labeled: USEPA COOLER TEMPERATURE INDICATOR.

2.6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE REQUIREMENTS

The field equipment used during this project includes the GPS unit and an organic vapor analyzer. Testing, inspection, and maintenance of these instruments will be performed in accordance with the manufacturers' recommendations and/or the SOPs listed in subsection 2.2.4. Due to the remoteness of this project, arrangements have been made to ship the spare parts to Anchorage, Alaska. The parts will be available to the field team within 48 hours of ordering.

All field instruments and equipment used for analysis will be serviced and maintained only by qualified personnel. All instruments will be maintained by senior staff and/or electronics technicians. All repairs, adjustments, and calibrations will be documented in an appropriate logbook or on a data sheet that will be kept on file. The instrument maintenance logbooks will clearly document the date, the description of the problems, the corrective action taken, the result, and who performed the work.

All equipment used by E & E in the field is subject to standard preventive maintenance schedules established by corporate equipment protocols. When in use, equipment will be inspected at least twice daily, once before startup in the morning and again at the end of the work shift before overnight storage or return to the charging rack. Regular maintenance, such as cleaning of lenses, replacement of in-line filters, and removal of accumulated dust, is to be conducted according to manufacturers' recommendations and in the field as needed, whichever is appropriate. All performed preventive maintenance will be entered in the individual equipment's logbook and in the site field logbook.

In addition to preventive maintenance procedures, daily calibration checks will be performed at least once daily before use and recorded in the respective logbooks. Additional calibration checks will be performed as required. All logbooks will become part of either the permanent site file or the permanent equipment file.

2.7 INSTRUMENT CALIBRATION AND FREQUENCY

All instruments and equipment used during fixed laboratory sample analyses will be operated, calibrated, and maintained according to the manufacturers' guidelines and recommendations, as well as criteria set forth in the applicable analytical methodology references and/or in accordance with the laboratory's QA manual and SOPs.

For the field instrumentation (GPS unit and organic vapor analyzer), calibrations will be performed in accordance with the manufacturers' recommendations and the SOPs listed in subsection 2.2.4.

2.8 INSPECTION/ACCEPTANCE REQUIREMENTS FOR SUPPLIES AND CONSUMABLES

This information is covered by the SOPs, the START-2 QAPP (E & E 2001b), and the START-2 QMP (E & E 2001a). Standards contained in these documents will be used to ensure the validity of data generated by E & E for this project. Sample jars are precleaned by the manufacturer; certification documenting this is enclosed with each box of jars. The START-2 will include this documentation as part of the site file. Nondedicated equipment is demonstrated to be uncontaminated by the use of rinsate blanks.

2.9 DATA ACQUISITION REQUIREMENTS (NONDIRECT MEASUREMENTS)

No data will be used from other sources.

2.10 DATA MANAGEMENT

This document is meant to be combined with information presented in E & E's QAPP and QMP for Region 10 START-2. Copies of the START QAPP and QMP are available in E & E's Seattle office. Standards contained in these documents will be used to ensure the validity of data generated by E & E

for this project. Data validation will be performed as listed in subsection 4.1.2. Data tracking, storage, and retrieval are tracked through the TDD "blue sheet," which records where the paper and electronic data are located. All paper data is stored in locked file cabinets; access to these files is restricted to key START-2 personnel. Electronic data will be archived by TDD.

Table 2-1

SAMPLE INFORMATION SUMMARY
ATKA CAPE KUDUGNAK SITE INSPECTION/PRELIMINARY ASSESSMENT
ATKA ISLAND, ALASKA

Project Sampling Schedule[a]	Parameter/ Limits	Design Rationale	Sampling Design Assumptions	Sample Selection Procedures	Measurement Classification	Nonstandard Method Validation
Drum Water Samples	SVOCs/CRQL	Determine if contaminants are present.	Drums contain hazardous materials.	One sample per drum type or disposal area.	Critical	Method-specific guidance.
Soil/ Sediment Samples	Pesticides/CRQL PCBs/CRQL SVOCs/CRQL TAL Metals/CRQL VOCs/CRQL	Determine if contaminants are present.	Contaminants were released to the soil or sediment.	Samples will be collected from potentially contaminated areas.[b]	Critical	Method-specific guidance.
Surface Water Samples	Pesticides/CRQL PCBs/CRQL SVOCs/CRQL TAL Metals/CRQL VOCs/CRQL	Determine if contaminants have reached surface water.	Contaminants reached groundwater or surface water.	Samples will be collected from potentially contaminated areas.[b]	Critical	Method-specific guidance.

[a] All samples will be collected during the field event.

[b] As indicated from previous investigations at the site and from on-site observations.

Key:

CRQL = Contract required quantitation limit.
Critical = Required to achieve project objectives or limits on decision errors.
PCBs = Polychlorinated biphenyls.
Pesticides = Chlorinated pesticides.
SVOCs = Semivolatile organic compounds.
TAL = Target analyte list.
VOCs = Volatile organic compounds.

Table 2-2

SAMPLE ANALYSES SUMMARY
ATKA CAPE KUDUGNAK SITE INSPECTION/PRELIMINARY ASSESSMENT
ATKA ISLAND, ALASKA

Matrix	Location/ Quantity[a]	Analytical Parameters/ Method	Sample Preservation	Technical Holding Time[b]	Sample Container(s)
Drum Water	Containers/ Up to 10	SVOCs/CLPAS OLM04.3 and/or EPA SW-846 Method 8270D	Cool to 4°C ± 2°C	Extract within seven days of collection; analyze within 40 days of extraction	Two 1-liter amber glass jars with Teflon-lined lids
Soil/Sediment	Stained Areas/ 24 samples including 2 background samples	Chlorinated pesticides & PCBs/ CLPAS OLM04.3 and/or EPA SW-846 Methods 8081B/8082A	Cool to 4°C ± 2°C	Extract within 14 days of collection; analyze within 40 days of extraction	One 8-oz wide-mouth glass jar with Teflon-lined lid
		SVOCs/CLPAS OLM04.3 and/or EPA SW-846 Method 8270D	Cool to 4°C ± 2°C	Extract within 14 days of collection; analyze within 40 days of extraction	One 8-oz wide-mouth glass jar with Teflon-lined lid
		TAL metals/CLPAS ILM05.3 and/or EPA SW-846 Methods 6010C/6020A/7000 Series	Cool to 4°C ± 2°C	180 days from collection (28 days for mercury)	One 8-oz wide-mouth glass jar with Teflon-lined lid
		VOCs/CLPAS OLM04.3 and/or EPA SW-846 Methods 5035/8260B	Cool to below 0°C for 40-ml vials (i.e., freeze) Cool to 4°C ± 2°C for 2-oz jars	14 days from collection	Two preweighed, 40-ml vials containing 5 ml water with stir-bars and Teflon-lined septa; One preweighed, 40-ml vial with stir-bars and Teflon-lined septa; and One 2-oz jar with Teflon-lined septa
Water	Surface water/ 3 samples including 1 background sample	Chlorinated pesticides & PCBs/ CLPAS OLM04.3 and/or EPA SW-846 Methods 8081B/8082A	Cool to 4°C ± 2°C	Extract within seven days of collection; analyze within 40 days of extraction	Two 1-liter amber glass jars with Teflon-lined lids
		SVOCs/CLPAS OLM04.3 and/or EPA SW-846 Method 8270D	Cool to 4°C ± 2°C	Extract within seven days of collection; analyze within 40 days of extraction	Two 1-liter amber glass jars with Teflon-lined lids
		TAL metals/CLPAS ILM05.3 and/or EPA SW-846 Methods 6010C/6020A/7000 Series	Cool to 4°C ± 2°C; HNO_3 to pH ≤ 2	180 days from collection (28 days for mercury)	One 1-liter polyethylene bottle with polyethylene-lined lid
		VOCs/CLPAS OLM04.3 and/or EPA SW-846 Method 8260B	Cool to 4°C ± 2°C; HCl to pH ≤ 2	14 days from collection	Two pre-preserved 40-ml jars with Teflon-lined septa
QC Water Samples	Trip Blank	VOCs/CLPAS OLM04.3 and/or EPA SW-846 Method 8260B	Cool to 4°C ± 2°C; HCl to pH ≤ 2	14 days from collection	Two pre-preserved 40-ml jars with Teflon-lined septa

[a] The number of samples presented is an estimate; the actual number of samples to be collected will be determined in the field.

[b] Technical holding times have been established only for water matrices. Water technical holding times were applied to sediment, soil, and product samples when applicable; in some cases, recommended sediment/soil holding times are listed.

Key:

°C	= Degrees Celsius.	HNO_3	= Nitric acid.	SVOCs	= Semivolatile organic compounds.
CLPAS	= Contract Laboratory Program Analytical Services.	ml	= Milliliter.	TAL	= Target Analyte List.
EPA	= United States Environmental Protection Agency.	oz	= Ounce.	VOCs	= Volatile organic compounds.
HCl	= Hydrochloric acid.	PCBs	= Polychlorinated biphenyls.		

Table 2-3

QA/QC ANALYTICAL SUMMARY and FIXED LABORATORY ANALYTICAL METHODS

ATKA CAPE KUDUGNAK SITE INSPECTION/PRELIMINARY ASSESSMENT

ATKA ISLAND, ALASKA

Laboratory	Matrix	Parameters/Method	Method Description/ Detection Limits	Total Field Samples[a]/ Containers	QA/QC Sample Summary Analyses/Containers				Total Field and QA/QC Analyses/ Containers[e]	Precision and Accuracy
					Organic MS/MSD[b]	Inorganic MS/D[b]	Rinsate Blanks[c]	Trip Blanks[d]		
EPA Region 10 or CLP Laboratory	Soil/ Sediment	Chlorinated pesticides & PCBs/CLPAS OLM04.3 and/or EPA SW-846 Methods 8081B/8082A	GCS & ECD/ CRQL	24/24	2/0	NA	NA	NA	26/24	OLM04.3/ OLM04.3
		SVOCs/CLPAS OLM04.3 and/or EPA SW-846 Method 8270D	GCS & MD/ CRQL	24/24	2/0	NA	NA	NA	26/24	OLM04.3/ OLM04.3
		TAL metals/CLPAS ILM05.3 and/or EPA SW-846 Methods 6010C/ 6020A/7000 Series	AA, ICP, & CVAAS/CRQL	24/24	NA	2/0	NA	NA	26/24	75% - 125%/ +/- 35%
		VOCs/CLPAS OLM04.3 and/or EPA SW-846 Methods 5035/8260B	GCS & MD/ CRQL	24/96	2/24	NA	NA	NA	26/120	OLM04.3/ OLM04.3
EPA Region 10 or CLP Laboratory	Water	Chlorinated pesticides & PCBs/CLPAS OLM04.3 and/or EPA SW-846 Methods 8081B/8082A	GCS and ECD/ CRQL	3/6	1/4	NA	NA	NA	4/10	OLM04.3/ OLM04.3
		SVOCs/CLPAS OLM04.3 and/or EPA SW-846 Method 8270D	GCS and MD/ CRQL	15/30	2/8	NA	NA	NA	17/38	OLM04.3/ OLM04.3
		TAL metals/CLPAS ILM05.3 and/or EPA SW-846 Methods 6010C/ 6020A/7000 Series	AA and ICP/ CRQL	5/5	NA	1/1	NA	NA	6/6	75% - 125% +/- 20%
		VOCs/CLPAS OLM04.3 and/or EPA SW-846 Method 8260B	GCS and MD/ CRQL	5/10	1/4	NA	NA	4/8	10/22	OLM04.3/ OLM04.3

[a] Total number of field samples is estimated.

[b] No extra volume is required for soil/sediment or product samples; for water samples, triple volume is required for organic analyses, and double volume is required for inorganic analyses. Sample numbers are based on MS/MSD per 20 samples per matrix.

[c] The total number of rinsate samples could vary depending on the total number of samples collected. The sample numbers are based on one rinsate per 20 samples per nondedicated sampling device. Note that rinsate blanks consist of water aliquots for both soil and water field samples.

[d] The total number of trip blanks could vary depending on the total number of sample shipments. This number is based on the estimated number of shipping containers. Note that trip blanks consist of water aliquots for both soil and water field samples.

[e] Total analyses and containers include both field and QA/QC aliquots to be submitted for fixed laboratory analysis. Note that trip blanks and rinsate blanks consist of water aliquots for both soil and water field samples.

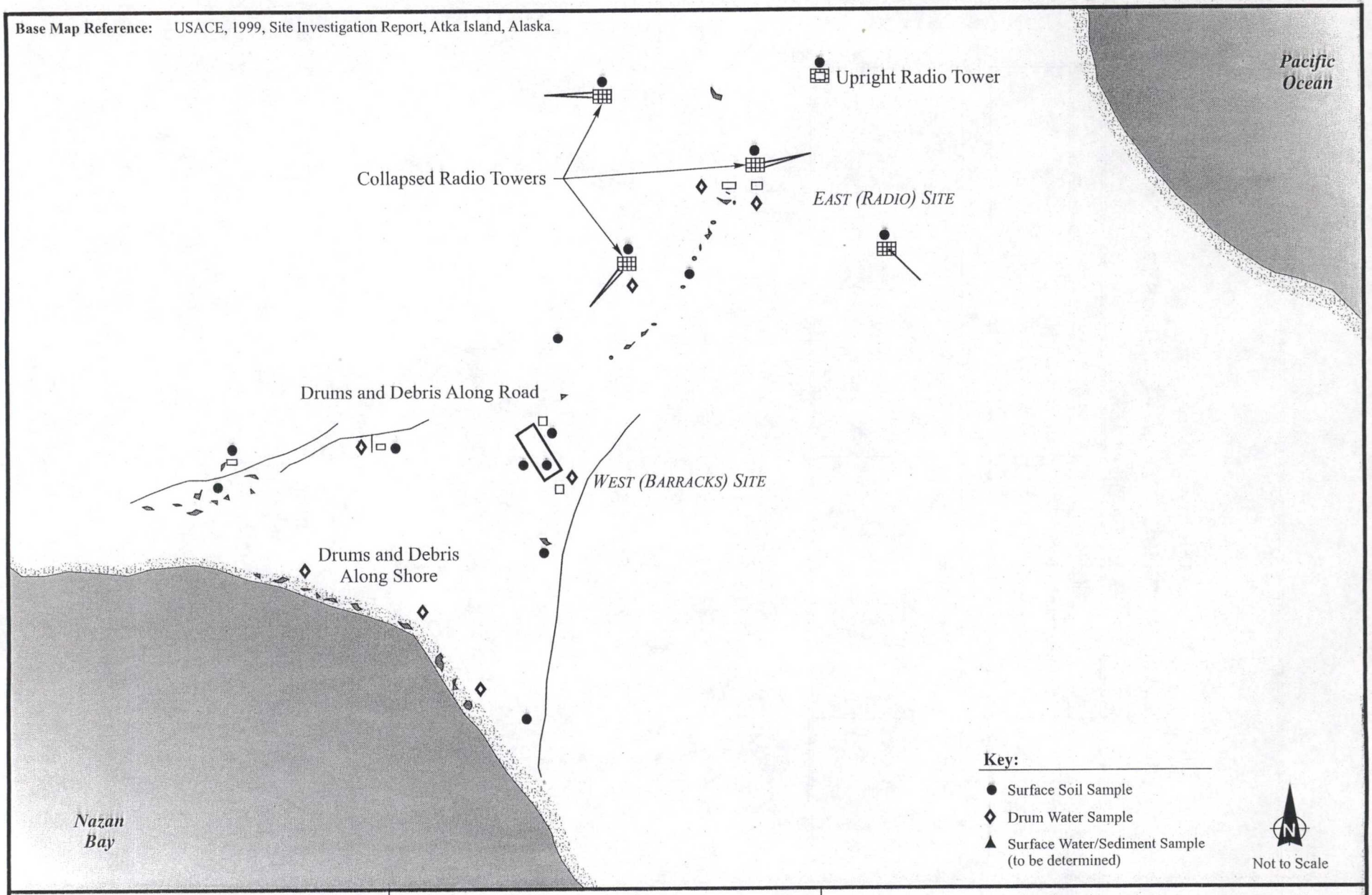
Key:

AA	= Atomic absorption spectroscopy.	GCS	= Gas chromatographic separation.	QA	= Quality assurance.
CLP	= Contract Laboratory Program.	ICP	= Inductively coupled argon plasma.	QC	= Quality control.
CLPAS	= Contract Laboratory Program Analytical Services.	MD	= Mass spectrometric detection.	SVOCs	= Semivolatile organic compounds.
CRQL	= Contract required quantitation limit.	MS/D	= Matrix spike/duplicate.	TAL	= Target Analyte List.
CVAAS	= Cold Vapor Atomic Absorption Spectroscopy.	MS/MSD	= Matrix spike/matrix spike duplicate.	VOCs	= Volatile organic compounds.
ECD	= Electron capture detection.	NA	= Not applicable.		
EPA	= United States Environmental Protection Agency.	PCBs	= Polychlorinated biphenyls.		

Table 2-4

SAMPLE CODING
ATKA CAPE KUDUGNAK SITE INSPECTION/PRELIMINARY ASSESSMENT
ATKA ISLAND, ALASKA

Digits	Descriptions	Code Example
1,2	Source Code	AT (Atka) BG (Background) TB (Trip Blank)
3,4	Consecutive Number	01 (First Sample of Source Code)
5,6	Matrix Code	DW (Drum Water) SD (Sediment) SS (Soil) SW (Surface Water) WT (Water)



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ATKA CAPE KUDUGNAK
PRELIMINARY ASSESSMENT/
SITE INSPECTION
Atka Island, Alaska

Figure 2-1
SAMPLE LOCATION MAP

Date:	Drawn by:	
7/19/05	AES	10:START-2\03080006\fig 2-1

3. ASSESSMENT/OVERSIGHT

3.1 ASSESSMENTS AND RESPONSE ACTIONS

The EPA QAO or designee may conduct an audit of the field activities for this project. The auditor will have the authority to issue a stop work order upon finding a significant condition that would adversely affect the quality and usability of the data. The EPA TM will have the responsibility for initiating and implementing response actions associated with findings identified during the site audit. The actions taken also may involve the EPA PO, contracting officer, and/or QAO. Once the response actions have been implemented, the EPA QAO or designee may perform a follow-up audit to verify and document that the response actions were implemented effectively. In-house audits performed by the START-2 may be conducted in accordance with the E & E START-2 *Quality Management Plan* (2001a). No audits are planned for the ACK PA/SI.

If major deviations from the QA requirements of the project and the CLP SOW were observed in the data validation process, the EPA QAO will contact the laboratory to correct the problem. If the laboratory is not responsive to the request, the QAO will inform the CLP Regional PO and the TM of the situation. A brief narrative will be written explaining the contract deviations and recommendations will be given based on the quality of the submitted data. Reduced payment and/or reanalysis at the laboratory's expense shall be pursued by the Regional CLP PO. Resampling and subsequent re-analysis will be decided by the TM. Additional sampling for corrective actions and/or any addendum to this SQAP shall be documented using the Corrective Action Form and the SPAF (Appendix B). Corrective actions will be conducted in accordance with E & E QMP specifications.

3.2 REPORTS TO MANAGEMENT

Due to the absence of telecommunications in the area of this project, the START-2 will contact the EPA TM on a weekly basis. Laboratory deliverables will be as specified in the CLP Organic and Inorganic Statements of Work (OLM04.3 and ILM05.3, respectively) for CLP data and CLP-equivalent deliverables for MEL data. Once the project is complete and the resulting data is obtained, the START-2

PM will prepare a final project report. The report will include a summary of the activities performed during the project and the resulting data (along with any statements concerning data quality). The report will be approved by the EPA TM prior to being forwarded to the individuals identified in the data distribution list located in the Table of Contents section of this SQAP.

The START-2 corrective action program is addressed in Section 3 of the QMP. Corrective actions will be conducted in accordance with these QMP specifications.

4. DATA VALIDATION AND USABILITY

4.1 DATA REVIEW, VALIDATION, AND VERIFICATION REQUIREMENTS

The data validation review of data packages will include an evaluation of the information provided on the analytical data sheets and required support documentation for all sample analyses; the supporting sample collection documentation, including chain-of-custody forms; and documentation of field instrument calibration, sample results, and/or performance checks (if required by the method). The QA review will also examine adherence to the procedures as described in the cited SOPs and the specified analytical methods in the SQAP.

4.1.1 Data Reduction

Data reduction includes all processes that change the numerical value of the raw data. All fixed-laboratory data reduction will be performed in accordance with the appropriate methodology and will be presented as sample results.

4.1.2 Data Validation

Analytical data generated through the CLP contract will be validated in a three week turn around time by the Region 10 QA office or its designee. Data generated by the MEL will be validated by the EPA TM designated validator (i.e., EPA QA office or contractor). All of the data validations will be performed in accordance with the QA/QC requirements specified in the SQAP, the technical specifications of the analytical methods, and the following documents:

- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (2004a); and
- *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (1999).

The QC parameters of interest for the EPA organic and inorganic methods that will be used on the ACK PA/SI samples are presented in these documents.

Validation deliverables will include a QA memo discussing QA conformance and deviations issues which may have affected the quality of the data. Data usability, bases of application of qualifiers, and percentage of qualified data will also be discussed in the QA memo. The analysis data sheets (Forms I) with the applied validation qualifiers and bias determination for estimated-qualified values will also be a part of the validation deliverables. The following qualifiers shall be used in data validation:

- U = The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
- J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
- UJ = The material was analyzed for, but not detected. The reported detection limit is estimated because Quality Control criteria were not met.
- R = The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.
- H = High bias;
- K = Unknown bias;
- L = Low bias; and
- Q = Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit (organics only).

4.1.3 Data Assessment Procedures

Following data validation and reporting, all project-generated and -compiled data and information will be reconciled with the objectives specified in subsection 1.3.1 to assess the overall success of PA/SI activities. This data assessment, including points of achievement and departure from project-specific objectives, will be discussed in the QA section of the PA/SI report.

4.2 DATA VERIFICATION

The analytical QA requirements and data validation requirements will be as specified in subsection 4.1.2 (EPA 1999 and 2004a).

The EPA TM will perform the final review and approval of the data. The EPA TM and/or QAO will look at matrix spike/matrix spike duplicates, laboratory blanks, and laboratory duplicates to ensure that they are acceptable. The EPA TM and/or designee also will compare the sample descriptions with

the field sheets for consistency and will ensure that any anomalies in the data are documented appropriately.

Data QA memoranda reports will be generated as part of the ACK PA/SI if the START-2 is responsible for data validation. If the EPA Region 10 QA office or its designee performs the data validation, then additional reports regarding data usability will be generated by the START-2.

4.3 RECONCILIATION WITH DATA QUALITY OBJECTIVES

The data quality indicators target for this project is discussed in subsection 1.4 of this SQAP. The data validation will be used as a tool to determine if these targets were met. Also, using the compiled data, E & E and the TM will determine the variability and soundness of the data and the data gaps that will need to be filled to meet the objectives of the project.

Once the data results are compiled, the EPA TM and/or the EPA QAO will review the sample results to determine if they fall within the acceptance limits as defined in this SQAP. Completeness also will be evaluated to determine if the completeness goal for this project has been met. If data quality indicators do not meet the project's requirements as outlined in this SQAP, the data may be discarded and resampling and reanalysis may occur. The TM will attempt to determine the cause of the failure (if possible) and make the decision to discard the data and resample. If the failure is tied to the analysis, calibration and maintenance techniques will be reassessed as identified by the appropriate laboratory personnel. If the failure is associated with the sample collection and resampling is required, the collection techniques will be reevaluated as identified by the START-2 PM.

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intentionally left blank.

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APPENDIX A

STANDARD OPERATING PROCEDURES

APPENDIX B

SUPPLEMENTAL FORMS

APPENDIX C

SAMPLE DOCUMENTATION AND CHAIN-OF-CUSTODY FORMS